Share/Guide Meeting Details · See Page 3

COMPUTERWORLD

The Newsweekly for the Computer Community

Weekly Newspaper – Second-class postage paid at Boston, Mass.

YOU Can Be Heard See Page 2

Vol. 2, No. 7 | Cambridge, Massachusetts, February 14, 1968 | Price: $9/year

GE Time-Sharing To Be Spread Around The Globe By New Group

Paul R. Leadley

NEW YORK, N.Y. -- General Electric has announced a new organization devoted to stimulating development of on-line computer time-sharing service businesses throughout the world.

The new International Information Services Department will be headed by Paul R. Leadley, former general manager of the GE department which developed the GE computer service network throughout the United States. William R. Eaton has been named as Mr. Leadley's successor for the U.S. Information Service Department. Both organizations will be headquartered in Bethesda, Md.

GE time-sharing service centers have already been established outside the U.S. in Toronto, Canada, and London, England. Plans call for more centers in Paris, Sydney, and other cities. More than 25 GE computer systems serve an estimated 50,000 individual customers in the U.S. and abroad today.

Self-Threading 360 Tape Unit Works At 320KB

WHITE PLAINS, N.Y. – A 320KB, self-threading, magnetic tape unit – the fastest using standard computer tape – has been announced by IBM. The 2420 can be used on System/360 Models 50, 65, 75, and 85. It costs $54,600 per drive, and uses a special $55,400 control unit.

The single capstan drive uses faster tape movement to increase speed – the density being the standard 1600BPI. It is twice as fast as previously available standard IBM tape drives.

Automatic Threading

Automatic threading has been incorporated to help improve overall performance. To thread a tape, an operator places a tape reel on the machine's hub and presses a button. The tape is carried on a cushion of air across the read/write head to the take-up reel where the loose end is automatically secured by a vacuum. IBM claims that the entire operation takes eight seconds, less than half the time required to thread manually: And that automatic threading is especially important in computer installations where tape reels must be changed frequently.

No change has been made in the gaps between record blocks – the standard IBM 3/5" space – and unlike the IBM 1" Hypertape Superdrives it is also necessary to complete rewinding of the tape after use before it can be demounted from the drive.

Delivery

Initial deliveries are scheduled for the fourth quarter of 1968. The 2420 will be manufactured at IBM's facilities in Boulder, Colorado, where it was designed.

ACM May Set EDP School Standards

WASHINGTON, D.C. -- A survey of the quality of data processing schools in different parts of the country – including checking out just what jobs their graduates are able to obtain after graduation – will be one of the immediate aims of the newly formed Steering Group on Accreditation which had its first meeting here last week in the office of Dr Carl Hammer.

The committee also decided not to recommend individual accreditation by the ACM – such as the Certificate In Data Processing given by the DPMA – but to concentrate on the schools. In the accreditation action they want to act as advisors on standards, leaving the actual accreditation (and its enforcement) to present authorities.

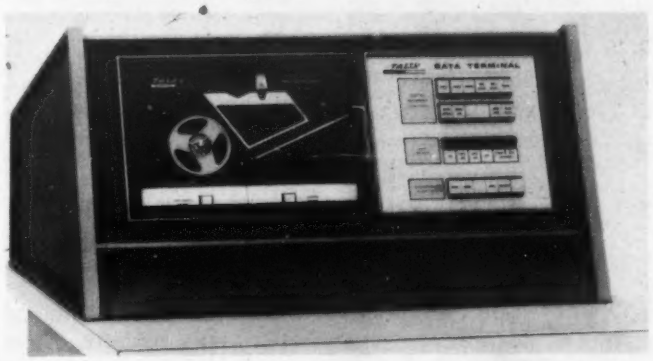
The committee is planning to meet every two weeks, and would like to hear from interested persons or organizations (whether they are members of ACM or not) so they can be placed on the appropriate mailing lists. The address is: Dr Carl Hammer, Univac, 2121 Wisconsin NW, Washington, D.C. 20007.

Winter Olympics Held In Remote (Computer) Area

Winter Olympics may take these skiers to remote places in the Swiss Alps – but not so remote that computers cannot ...m. The magic letters "IBM" can be seen just below the window in this view of a skier's hut.

1,000 Keytapes Ordered

New Developments Attract Users To Key On Tape — Avoiding Cards



The Tally equipment has just been tied into System/360 hardware and software. It allows for input from cards and paper tape as well as direct keying onto tape.

Last week saw the Mohawk domination of the market for keying directly on tape attacked by two competitors, while others were rumored to be getting ready. Honeywell, which announced their Keytape unit just the week before, found that they had sold over 1000 units – making this the best announcement in the company's history. At the same time, Tally Co. announced the first successful use of their equipment on-line with the 360.

Record Crowds

The Keytape device (CW Vol. 2, No. 6) announced by Honeywell, along with their new H-110 system, was welcomed in 12 cities by the largest crowds Honeywell has ever managed to attract – with over 1,000 people attending some of the shows. While many were more interested in the 110, the Keytape attracted special attention from people who do not have Honeywell computers. One order in the south called for 124 units to a single firm, to be used in preparing data for IBM systems.

Tally Software

In the meantime, Tally Corporation put one of their data terminals into on-line operation with the System/360 for the first time. The Tally system, unlike the Honeywell and Mohawk units, uses a typewriter keyboard for keying in the data.

The Tally system was installed in Dallas for Fritz Glitsch & Sons. The data is being received from the field, using ordinary dial telephone networks at a speed of 120 chars/second, and being stored on magnetic tape. The tape acts like a System/360 magnetic tape unit with a speed of 16KB, responding through the multiplexor channel just as any other slow-speed tape unit would operate.

Tally has provided special software for diagnostic operations, and for interfacing the Tally unit with the 360 Disk Operating System.

Other Suppliers Coming?

In the meantime, the industry grapevine reports that a number of other firms are presently preparing to market devices that key onto magnetic tape. Among those expected to make announcements are IBM, Burroughs, Sangamo Electric, and Systronics. It is not possible to say just how firm these rumors are.

One firm that was conspicuously absent in these rumors was Univac – the originator of the whole idea in the early 1950s. Their Unitypers were used to provide original data to all the early Univac I computers, and it was not until considerably later that punched cards, rather than magnetic tape, became usual input for their computers.

New Types Of EDP Courses Arrive As EDP Education Booms

NEW YORK, N.Y. – Courses for salesmen on how to sell to the computer user and for users on how to evaluate magnetic tape units have been announced this week. The burgeoning data processing education industry has come up with two new courses to supplement the older, standard courses being offered.

The salesman's course will come from Computer Learning Corporation. Sven Larson, Computer Learning's vice president, told COMPUTERWORLD that they had found there was a great and growing need for such a course – not merely from computer manufacturers, but also from firms who were selling supplies to users. Computer Learning, backed by a New York investment banker, intends to open their first center in Washington shortly, and to rapidly expand across the country. "We are going to become the supermarket of the computer education field," Mr Larsen said.

Magnetic Tape Workshop

On the Pacific coast Consolidated Electrodynamics is also preparing new courses at their Los Angeles office. They are preparing to market a plug-for-plug 360-compatible tape unit, and are understandably anxious that potential buyers will be able to read and understand the specifications of various units in the growing market.

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Editorials

Speak Up, Users

Model 20 and Model 30 users outnumber all other computer users put together. Many of the discussions, however, that are carried on in various standards committees – although they greatly affect the lives and productivity of these installations – are not truly representative of them.

This is reasonable. The discussions are long, detailed, and full of obscure points. The Model 20 and 30 user is interested in plain things like this year's profit and productivity. The opportunities for improving profit by working on standards is normally long term.

But, every now and then an opportunity does occur. One such opportunity has been made by Congressman Brooks' letter. (See CW Vol. 2, No. 6, p. 2.) This is in setting up basic goals and deciding what is really needed. Nothing quite like this has previously occurred within the industry. Or, for that matter, in any other industry! So, if you are a user, and want to change things for the better – now is the time to speak up.

A Professional Question

There has been much discussion as to how we can become professionals in this industry, but little discussion as to whether or not there is a need for professionalism. It has been generally accepted that there is such a need.

However, the same argument on the other side of the Atlantic has produced a set of objections on the need for professionalism. It was argued that the qualifications being offered are dubious (because of the fast obsolescence of skills in our industry); that the cost of these skills is too high (with the constantly rising subscription and membership fees of today's societies); and that there is the implicit danger of the industry becoming a closed shop – oblivious to the world and serving only the needs of individual members.

The objections are reasonable, and we suggest that the DPMA, ACM, and SPA carefully review our situation, to see that no equivalent objections can be raised against us.

Quick Action

The policing of data processing schools has been a problem for some time. There have been scandals -- some open, more word-of-mouth -- about the schools and their operations. Some of these scandals were well based, some were not. No one knew how to distinguish one from the other.

COMPUTERWORLD, therefore, welcomes the initiative presently being shown by the ACM. They have set up a steering committee on the problem of accrediting. We also welcome the intent of the committee to stay active. This is the style of activity we like to see, and hope that it will lead to satisfactory solutions.

COMPUTERWORLD
The Newsweekly for the Computer Community

TM Reg. U.S. Pat. Off.

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Back To Step 1...

It is not often that an industry gets a second chance – but it appears to have happened to the EDP industry, mainly as a result of Congressman Brooks' letter on Standardization (CW Vol. 2, No. 6, p.2). The letter called for new thinking on the whole issue of standardization policies – to ask just what was valuable and how it would work. It seemed to be important so COMPUTERWORLD paid the congressman a visit in Washington to find out if it was for real.

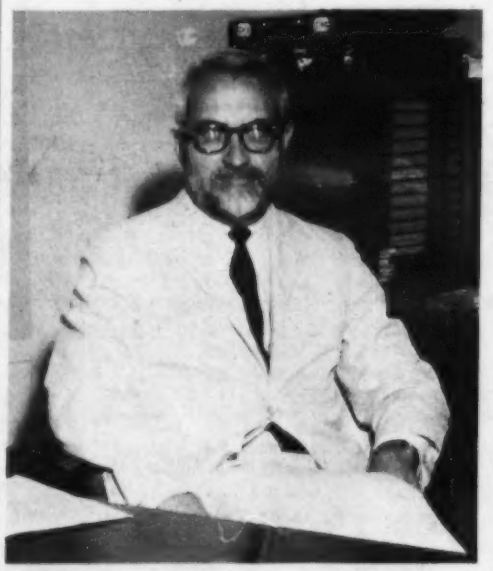
And sure enough – it turned out to be for real!

Congressman Brooks

Brooks opened the discussion by pointing out that he was not an expert. He did not want to handle technical items – but he did feel that some EDP industry actions might be leading to other than the best possible results. He was quite emphatic about this, pointing out that he was not criticizing or condemning anything. "PL/1 may be exactly what is wanted," he said, "but I do not think that we know that it is, and I think this is so important that we should know."

This basically was his main point. We should know that we are doing the right thing – and we should take time to be absolutely sure. At the same time, Brooks stressed that emergency methods – such as decreeing moratoriums – were not in order. "Of course we must continue buying the computers. We need them." He continued, "but we must be certain that we are doing the right thing."

The rest of the computer community appears to share the congressman's feelings. "We have a five-year-old standard, which practically no one is using," said one high official, refering to the American Standard Code for Information Interchange (ASCII). Other comments were expressed in terms critical of the industry itself. "I do not believe that any one company should be allowed to effectively dictate to us what language we shall speak," was another comment directed toward the PL/1 question.



Dr. Herbert Grosch, dynamic director of the NBS's Center for Computer Sciences, will personally consider YOUR ideas on what EDP standards should be if the user is to be properly served.

Congressman Brooks in his office last week talking to Computerworld's editor Alan Taylor.

Most remarks, however, were of a more constructive nature. They were concerned with what the user needed, and how he could get it. One suggestion was that entrances to operating systems be standardized – so that a language such as Cobol, which has a compiler, could be really machine-independent. Yet another idea: "Perhaps we are operating on a wrong set of standards – instead of insisting that all people use the same codes, perhaps we can get the same results by putting a label on the tape which says what codes we are using."

But no matter who was being interviewed, it was clear that there was a willingness to rethink the basics. Christopher Shaw is planning a special issue on the subject in his ACM Special Interest Group on Programming Languages newsletter. The USA Standards Institute is setting up a

continued on page 3

WHY DON'T YOU TRY YOUR HAND AT SAYING WHAT YOU WANT THEM TO BE?

COMPUTERWORLD promises that you will not go unheard. We have obtained the cooperation of Dr. Herbert Grosch, director of the National Bureau of Standards Center for Computing Sciences. He will personally read each and every comment that is sent to him. All you have to do to get your ideas heard is to write them down and send them to COMPUTERWORLD with the coupon below. We will see that they get read.

To The Editor, COMPUTERWORLD, 129 Mt. Auburn St., Cambridge, Mass. 02138

I am enclosing, on a separate sheet, comments for the consideration of Dr. H. Grosch, director, the National Bureau of Standards Center for Computing Sciences.*

These are relevant to:

- ☐ Brooks' letter, Point 1 – "There is a need for specific problem definition in the data processing standardization effort."
- ☐ Brooks' letter, Point 2 – "The standardization effort must be altered to optimize results."
- ☐ Brooks' letter, Point 3 – "Independent criteria identifying the characteristics of a new generation common computing language must be developed."
- ☐ Other.

See COMPUTERWORLD Vol. 2, No. 6, p. 2 or **Communications** of the ACM Vol. II, No. 1, p. 55 for the text of Congressman Brooks' letter to Charles L. Schultze, director, Bureau of the Budget.

Name _____ Title _____

Company or Organization _____ Address _____

I do ☐ do not ☐ wish you to consider these comments for publication in CW.

*Copies of your comments will be forwarded to Congressman Brooks by COMPUTERWORLD.

Administration Backs Away From Proposed Ban On Program Patents

The Johnson Administration has backed down from explicitly outlawing the patenting of computer programs, as it had previously proposed. The withdrawal came just as Richard C. Jones of Applied Data Research, Inc. was about to oppose the issue. Jones did not actually testify before the McClellan committee, but his statement will be included in the published proceedings.

The President's Commission on Patents and Copyrights originally said that: "A plan of action or set of operating instructions, in whatever form presented, to cause a controllable data processor or computer to perform selected operations shall not be patentable." This statement was entered as Section 106 of the Proposed Patent Legislation. The Commission felt that Section 106 was important because it would be impossible to check out whether or not someone had created the same program at an earlier date, and because large numbers of computer programs had been done without patent protection. Jones quoted COMPUTERWORLD in his rebuttal to the Commission proposal, and in his statements stressing the overall importance of the issue.

Jones said that manufacturer supplied programs are, in fact, being sold – not given away free – to a captive market, and therefore the manufacturer has no need for patent protection. He pointed out that the manufacturer would be hurt by the existence of patented programs because software conceals the real price of equipment, allowing him to make a larger than normal profit. Jones did not mention any figures to support this contention, but industry sources estimate that IBM's actual production costs are only about 15% of their sales price. Other major manufacturers spend higher percentages on their hardware, but it is rarely greater than 30%.

Now that Section 106 has been withdrawn, the question of program patents will have to be rethought. However, it seems apparent that programs may well become patentable under the new proposed legislation.

15 Parallel Sessions

Merged Share/Guide Meetings Possible

A picture of the meeting of a possible merged Share/Group users group was presented this week by a special committee working on the project. It showed that there were indeed some practical locations for these meetings – disposing of the prime question as to whether it was physically possible to hold such large meetings. It also made recommendations about meetings which, if actually held, would result in:

Election campaigns lasting no more than 8 hours – yet deciding the leadership of the joint organization for a year.

The need for up to 15 concurrent sessions – opposed to the seven for present Guide meetings, and 12 for Share.

The press being excluded, except under exceptional circumstances.

Five-Day Meetings

The report came from the Guide/Share Merger Study, under the chairmanship of Jack Noerr. The committee recommended that five-day meetings be held twice a year, in November and May. The Monday and Tuesday meetings would be devoted to closed project sessions; open meetings from Wednesday on. The expected attendance would be upwards of 2400 from about 1100 installations, and an unknown number of IBMers. (Figures presented showed that only 20% of the Guide meeting attendees were IBMers, as against nearly 30% of the Share attendees.)

Elections

Elections would take place on the Wednesday starting the November meeting, with the nominating committee announcing the official slate – and any other candidates – at the 8:30 meeting. The format of these announcements, including what details about candidates should not be given to the membership, was described in detail – as were the details of the polling that ends at 5 pm the same day. No provision for announcing the actual number of votes cast for an individual candidate was included, although the final results would be both posted and announced.

The Fourth Estate

The committee recommended that any member of the working press should be prominently identified as such. "These people," it said "should be admitted only on the approval of the executive board" and recommended that such approval be given only under very exceptional circumstances. No reason for this recommendation was given.

In recent times neither of the two organizations have received a great deal of press coverage. Datamation reported in some detail on the Share session at which the IBM chairman, Thomas Watson, discussed the unexpected problems IBM was having with their 360 software. COMPUTERWORLD covered the Share meeting last August at which the IBM policy on Cobol, Fortran, and PL/1 was revealed.

Both of these cases affected many people outside the Share and Guide organizations, but were not otherwise announced by IBM.

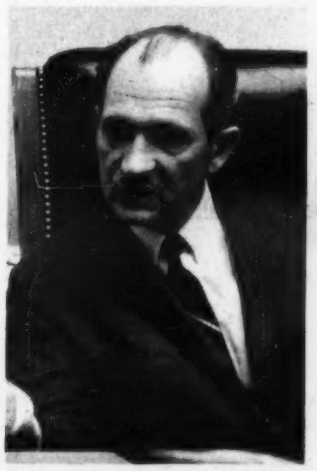
Organization

In an accompanying report, by another committee, it was suggested that the ACM should be involved in establishing a full-time secretariat. The report said that the ACM Executive Committee would probably approve of such an agreement.

The suggested Share/Guide organization would have seven divisions and three standing committees. Communications with IBM were carefully defined, with various project groups being responsible for passing "resolutions" – by consensus rather than by majority. These would deal mainly with recommendations for new facilities or modifications of existing ones. Four weeks have been allowed for IBM to answer such resolutions, or to say when an answer would be given.

Basis Of Standards Being Reconsidered

Computerworld's Editor listens and realizes that the Congressman is serious about his questions – and expects to get proper answers.



Congressman Brooks asks that EDP people include within the standardization effort a practical means of evaluating software and hardware developments.

He instances PL/1 as a case where a standard language could result from the default of forceful, affirmative efforts – even though it may be less than the best.

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new group to study standards planning. In short everyone is ready to do something.

The fact that everyone is ready to rethink the essentials necessary to put EDP on the right road means that there is an opportunity for the ordinary user to be effectively heard. Currently, the voice of the user is not too effective. Only representatives of companies who can afford to have employees flying from coast to coast – and spending most of their time on committees – have veed heard. This automatically excludes many users.

This has been unavoidable. The details of standard implementation are horrendous, and require full-time attention. But the basics are simple! The basis of Cobol and Fortran is that a program written for one computer should be able to run on others. The basis of ASCII is that a tape written on one computer should be able to be read on others. The bases for the next set of standards should be equally simple.

Special Course For Tape Users

continued from page 1

Their course is a $225 Magnetic Tape User Workshop, where an engineer can learn about the interpretation of performance specifications, and the details of various compatibility forms – including the broad subject of IBM compatibility.

Consolidated Electrodynamics also offers classes in tape system operation and maintenance – another useful course for people using tape units that are not supplied by the computer manufacturer.

Another development during the week was the first leasing out of specially created EDP training facilities. This occurred when the University Computing Company, Dallas, announced that they were holding a special course – in the Watergate facility owned by the Stirling Institute, itself a vendor in the EDP education industry. The new semester also saw new offerings from the ordinary schools such as the Advanced System Analysis at the New School in New York.

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Our client, a leading insurance and mutual fund company headquartered in San Francisco, is seeking a systems analyst to act in a liaison position between company management and the 360-oriented data-processing installation. Reporting to the Manager of Data Processing, he will consult with leading executives, managers of investment funds, and security analysts to prepare specifications for approved systems, indicate in detail the source and form of original data, the logical processes to be performed, and the output requirements. He will also provide users written procedures describing input requirements and the meaning and user of output.

Ideal candidates will have at least three years of business systems experience in a computer-oriented environment in one or more of the following fields: Mutual funds, stocks and bonds, banking and investments, or life insurance, preferably utilizing higher mathematics or statistical techniques. A thorough background in FORTRAN is required. Degree preferred.

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EDPeople

Bydlinski To Potter Service

Charles R. Chandler has been promoted to the position of supervisor of data processing operations for *Barnes-Hind Pharmaceuticals Inc.*, Sunnyvale, Calif. Chandler joined Barnes-Hind three years ago as a tab operator. He has 13 years of data processing operations experience, and prior to joining Barnes-Hind was supervisor of the data processing department for Lockheed Missiles & Space Co.

Jim Wright has been appointed manager of new product development for *Transistor Electronics Corp.*, Minneapolis.

Keene Taylor has been named director of the Federal Systems Division of the *Jonker Corp.*, Gaithersburg, Md. Taylor was also elected a vice president of the company.

Edmund K. Bydlinski has been appointed customer service manager of *Potter Instrument Co., Inc.*, Plainview, N.Y.

Harold V. Greenberg, Richard Fauvell and **Newton Kerman** are the officers of the newly established *Digimatics Inc.*, Garden City, N.Y. The company will provide systems studies, and the application of computer systems to problems of business, industry and sciences.

Dunlop, Canada To Use H-200; Has 100 Programs Ready To Run

Orders and Installations

Great Lakes Computer Services, Ltd., Niagara Falls, Ont., has ordered a *Honeywell* 120 computer system. Another Canadian company, *Dunlop Canada Ltd.*, Toronto-based manufacturer of rubber and plastic products, has installed a Honeywell Series 200 system. The company has more than 100 programs running around the clock to keep track of its 65 stores, departments and branches.

Southern Indiana Gas and Electric Co. has installed a *Honeywell* 200 system to handle customer accounts.

The *Japanese Post Office Ministry* has installed three *Honeywell* computers to handle its millions of low-cost insurance policies. Three more computers will be installed before 1970.

ERIC (Educational Research Information Council), a federal agency operated by the Department of Health, Education and Welfare, will transfer its education study reports to microfiche transparencies. *NCR* was awarded the $125,000 contract, which will involve the production of a million transparencies.

The *St. Paul (Minn.) Regional Red Cross Blood Center* has ordered a whole-blood inventory control system from *Lockheed Missiles & Space Co.* A communications link will connect the St. Paul center to the Lockheed computers, which will process blood-use information from St. Paul nightly and report each morning on the location of every unit of blood in the center's inventory.

Clark Equipment Corp., Buchanan, Mich., has ordered two *Univac* 1108 systems as the basis for a large multi-purpose business information system.

Interstate Drug Exchange, Inc., Plainview, N.Y., has ordered a *Univac* 9200 computer to handle its entire mail order business.

The *Miles Druce Group*, British steel distributor, has installed a *Univac* 1050 computer system. The computer, located in High Wycombe, 30 miles north of London, is the first link in a real-time communications network connecting the company's headquarters with nine warehouses and service centers.

The *First National Bank of Fort Walton Beach, Fla.* has ordered a *Burroughs* B340 electronic data processing system designed for banking and valued at more than $180,000.

Management Computer Service, LaCrosse, Wis., has installed a *Burroughs* B300 system valued at more than $275,000.

T. Wall & Sons (Ice Cream) Ltd., Gloucester, England, has ordered an *I.C.T.* 1900 Series computer for delivery this year. A feature of the system will be an optical mark reader which will eliminate the need for punch cards and paper tape.

The *Department of Institutions of the State of Washington* has contracted with Computing Sciences to implement a state-wide data collection and communication network.

A new instant accounting service has been installed at the two offices of the *First Federal Savings and Loan Association of Huntsville, Ala.* In the new system, developed and operated by Computer Sciences Corp. (CSC), electronic terminal consoles in savings and loan offices are linked by telephone circuits to a central computer at CSC's Huntsville facilities.

memo to:

PROGRAMMER/ ANALYSTS

At Honeywell EDP's Technology Center one of our important activities is researching and developing software for commercial systems. Currently, selected professional teams are engaged in the design of software packages which will maximize the efficiency of present and future generations of hardware.

To be an integral, forceful factor in these efforts, we seek **PROGRAMMER/ANALYSTS** whose imagination and creativity can be applied to the original conception and development of complex software systems. We are specifically interested in:

MASS STORAGE: the design of software to control and utilize random access storage devices.

COMPILER TECHNIQUES: translation and simulation of existing programs and systems so that they may be more effectively used with new hardware and software.

PRIMARY SYSTEMS DEVELOPMENT: the design of complete operating systems to act as interface between customer applications and computer systems in a real time environment.

COMMUNICATIONS SOFTWARE: to monitor, control and interface communications networks and computer systems in a real time environment.

SCIENTIFIC SOFTWARE PACKAGES: development of software for use in Operations research, linear programming, numerical control, math modeling and simulation.

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Introduces SLT Into 360 Line

360/85 Can Have 4000K Memory, & Emulate 7000s

WHITE PLAINS, N.Y. – The IBM System/360 Model 85 announced last week (see CW, Vol. 2, No. 6, p. 8), uses advanced technologies and design innovations to achieve ultra-high computing performance. Among its features is a "buffer" memory that operates with a cycle time of 80 nanoseconds.

The most powerful computer now offered by IBM, the Model 85 is said to process data up to three times faster than the Model 75, the next most powerful System/360. However, it is best compared to the 360/65 – rather than the 360/75 – because like the 65, and unlike the 75, it is able to emulate programs from the IBM 7000 series.

Nanosecond Speeds

The difference occurs between the two units because the Model 75 gets its speed from the hard wiring being used for logic (which cannot be modified to fit the 7000 series codes), while the 85 uses solid logic technology (SLT) – for the first time in the 360 series. SLT provides an ultra-high speed (80 nanoseconds) buffer and control memory in addition to ultra-ultra high speed switching (four nanoseconds). These high speeds make practical the necessary flexibility for emulator functioning.

For the 7000 user, who may or may not have moved to the Model 65, the 85 gives faster emulation than was possible on the 360/65. Although the 85 is approximately ten times faster than the 65, the emulation will only be about three or four times faster – working at double the speed of the 7094 II.

In addition to the buffer, key elements contributing to the Model 85's speed, power, and overall performance are: Massive main core storage of up to 4-million bytes (8-million decimal digits) – four times the largest memory configuration previously available with smaller system 360s; Overlapped operations that allow the computer to do many functions concurrently. The Model 85, for example, can look ahead in the program, fetch instructions, calculate memory addresses, and prepare the instructions for execution at the same time it is working on an earlier instruction.

No Special Software

Full Operating System software will be used, just as it is on other smaller system 360s. Apparently no special software is being created for the new machine. This means that the object-code produced by standard OS compilers – which is not designed to take advantage of the unusual 360/85 buffer – will be normally used.

Buffer Memory

The buffer memory in the Model 85, unusual in both concept and design, has a cycle time of 80 nanoseconds – about 12 times faster than the main magnetic core storage. In this short time span, the data needed is located in the buffer and sent to the arithmetic and logic unit.

This technique takes advantage of the fact that the CPU of a computer usually seeks data stored in memory locations adjacent to each other. Frequently, it requests the same data many times in succession.

In the Model 85, each time the CPU calls for data from core storage, it asks for at least one and up to 16 bytes. Core storage, however, anticipating the CPU's future needs, always sends a block of 64 bytes, equivalent to 512 binary digits.

The additional data is adjacent to that sought by the CPU. This 64-byte block is streamed into the buffer storage, which can accommodate 16,384 bytes in sectors of 1,024 bytes each. The CPU can then work directly with the data in the buffer memory instead of having to go to the slower main core storage. The speeds of the buffer and the CPU are identical – 80 nanoseconds.

IBM claims that the CPU will find the required data within the buffer memory 95% of the time. Either the data will have been received previously in a 64-byte block, or it is being used repetitively in a computing "Loop." If fetched from core storage and transferred into the buffer memory in a large block. The first word of the block – the data sought – is sent simultaneously to the CPU.

Storage operations update both the main core and buffer memories at the same time.

The system automatically keeps track of the last time a block of data in the buffer was used. If room is needed for new data from core storage, the blocks that have gone unused for the longest period of time are automatically erased and the new data is entered in one operation.

The buffer is "transparent" to the user; that is, it operates automatically without special instructions from a programmer. The user perceives only that the computer works as if its large core storage is much faster than its nominal speed of one microsecond.

To reach the maximum claimed speed of 12,500,000 instructions a second the system will have to execute each instruction in one 80 nanosecond cycle, with the instruction extraction, data obtaining, and storage all being fully overlapped and available in the buffer. The extent to which this is achieved in practice is not clear.

Precision and Options

The CPU, which has separate instruction and execution sections, can fetch several instructions from the program before they are actually needed. While doing this, it can automatically calculate memory addresses, prepare instructions for execution in proper sequence, check its own operation, and control input/output devices.

A special feature called extended precision allows greater precision than ever before available in a standard System/360 model. It is designed for scientific applications involving very large numbers, allowing the user to extend the floating-point precision of his work to 112 bits, equivalent to a string of 34 decimal digits.

Optional features include: High-speed multiply. A large multiplication, such as two 17-digit numbers, can be done in less than 600 nanoseconds, floating point; in less than 450 nanoseconds, fixed point; Expandable buffer memory. The high-speed buffer memory can be expanded from 16,384 bytes to 24,576 or 32,768; Emulation. A compatibility feature and emulator program allows the Model 85 to perform like an IBM 709, 7040, 7044, 7090, 7094, or 7094-II at greatly increased speeds. For example, using programs written for the 7094-II, Model 85 will give up to double the internal performance.

Unique Console

Most conventional indicator lamps usually found on computer consoles are eliminated in the Model 85 console. The new console, which is linked to the CPU, has two microfiche viewers and a cathode-ray tube (CRT) display.

The CRT display is used both for diagnostic purposes, and – with the addition of a keyboard – as an operator's console. The contents of the various arithmetic and logic registers are shown in numerically coded form.

The microfiche viewers are used only for maintenance. A separate operator console with a typewriter-like terminal also may be attached to the Model 85.

Price and Availability

Model 85 monthly rentals will range from $96,000 to $220,000, with purchase prices ranging from $4.5 million to $10 million, depending on configuration. A system with 2,048,000 bytes of core storage will rent for approximately $175,000 a month and sell for $7,500,000.

Model 85 was designed at IBM's Poughkeepsie, N.Y., laboratory where a prototype system is undergoing engineering tests. Production models will be built at IBM's Kingston, N.Y., facilities.

First customer shipments will be scheduled for the 3rd quarter of 1969.

Unnamed Firm Carries RCA's Hopes Into New Nationwide T-S Service

RCA has announced plans to provide a national time sharing computer system in collaboration with National Credit Company. The system will be based on the Spectra 70/46, which has a special time sharing software package that becomes available this summer.

The new company (as yet, nameless) will open its first center in Baltimore during 1968. Similar centers are planned in 10 or more other cities across the country. It is expected that the initial market will be in engineering organizations, universities, and technically based businesses. Time share subscribers will be able to use displays as well as the more conventional teletypewriters to communicate with the central computers.

The use of the Spectra 70/46, while an obvious choice for RCA, is particularly interesting because of the relatively small number of design changes that were incorporated in the system when it was developed from the 70/45. The Auerbach Reports pointed out that RCA had designed its system with more modest goals than those of GE or IBM. The maximum of 48 remote terminals appears to put some potentially serious user limitations on the system. The same source reports that RCA feels a response time of 8 seconds can be expected when all terminals are active and background programs are running.

Only A Few Systems

Computer Leasing Begins With Eastern's 360/65s

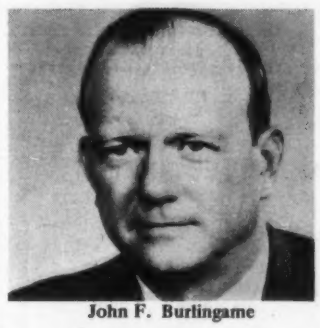
PHILADELPHIA – Eastern Airlines has switched from computer renting to third-party leasing with the acquisition of three IBM 360 Model 65 computers on lease from Management Data Corp. (MDC), Philadelphia. Eastern has signed an agreement to lease the systems, valued at $8.3 million, over an eight year period.

Eastern said the agreement will result in substantial savings over the lease period. The actual amount of savings was not released, but it will certainly be in the area of 40%, over the life of the lease. (See CW Vol. 2, No. 4, p. 3.)

The computers are being installed in a new Computer Sciences Building at the airline's Miami base and will be used in general business applications. The three Model 65 computers to be used for Eastern's reservation system will be installed at a later date.

Gilbert N. Zitin, president of MDC, said this was the first major lease agreement written by his company's new computer leasing division and stated that he was "pleased that it was with a firm of the caliber of Eastern Airlines." Zitin said his firm has already purchased $3 million worth of equipment from IBM and the remaining $5.3 million in equipment will be purchased and delivered over the next six months.

GE's Info Systems Grows Again



John F. Burlingame

PHOENIX – General Electric's military and special-purpose computer businesses have become part of the Information Systems Equipment Division, headquartered here. This continues the consolidation of GE's information systems products and services in the newly-organized Informations Systems Group.

John F. Burlingame will continue to direct the special information products organization in Syracuse, N.Y. No immediate transfer of people or facilities is involved.

SPA Offers $2000 Grant For PhD Candidates Studying Management

Applications for a $2,000 Management Systems Dissertation Grant are now being accepted by the Systems and Procedures Association.

Applicants must submit a one-page outline of the study area, a comprehensive summary of the proposed doctoral dissertation, and furnish a letter stating the proposal has been approved by the candidate's dissertation committee.

Completed applications must be received at SPA's International Headquarters, 24587 Bagley Road, Cleveland, Ohio, by March 1. Announcement of the winner will be made by May 1, 1968.

Last year's winner was Dr. Leonard R. Lamberson of Texas A&M, who wrote on "A Theory for Time Compression in Network-Based Scheduling Systems."

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Computer Shipments Exceed Estimates

Various estimates of computer industry progress in 1967 all agree that there has been a bigger boom than was expected at the start of the year – but they vary widely as to just how big the boom was.

One of the more conservative estimates, the EDP Industry Report, says that shipments rocketed to $5.9 billion last year (a 60% increase), and that there are some 57,600 systems installed throughout the world with 40,600 of them in the U.S. Other estimates say that these figures are too low. The Diebold Group, for instance, estimate that there are 52,000 systems in the U.S. – an apparent 10,000 computer discrepancy.

Liesa Bing, Diebold vice president, when asked to comment on the discrepancy, said "Well, I know that our figures were too low last year, so perhaps...." Later she said the reason for the difference was most likely in the type of items included in the counts. Diebold estimates, she pointed out, include such items as Wang calculators – not usually included in these surveys.

Jim Peacock, managing editor of EDP Industry Report, said that they were aware of the discrepancy, and stood by their published figures. "We use a sample which contains details on at least 60% of U.S. computers," he said, "and that's a pretty good sample to work from!"

An examination of comparative figures for individual computers shed little light on the matter – except to say that the problem was not just in the inclusion of some smaller computers, as Diebold had suggested. This made some difference, of course, but the discrepancy was still over 15%.

1967 was certainly a "banner" year for computers in the U.S., but just how "banner" is another story.

Solution To High-Speed Copier Costing

Bills running much higher than were forecast are one of the problems with the Xerox 2400, and other high speed copiers. They are so easy to use that many people like to run off 100 or so copies of their resume and otherwise do unauthorized copying. At the same time, the price of the equipment is so high that it normally takes a number of departments to support it. One answer to the problem is the use of a six-lock accounting "key-only" control system, such as the one illustrated. This one costs $175 – from Coin Controls Co., Chicago.

Too Few Names

Randolph To Buy EDP School, Bureau

New York, N.Y. – Randolph Computer Corporation took it's first step into the computer education business this week – and by a historical coincidence (and through the current shortage of names throughout the industry) managed to confuse a number of market-watchers.

It all started last May when Randolph Computer, then just a leasing company, acquired a service bureau. They then bought a firm in Portland, Oregon called United Data Processing, Inc. Then, at the end of the year they decided to diversify once more – this time into the growing computer education business. Looking around, they found just the company – and last week announced an agreement to buy the College of Automation in Cincinnati, and its parent company.

The name – "United Data Processing"!

But there is actually no connection between UDP in Oregon, and UDP in Ohio.

Both companies will operate, under present management, through another newly formed company – Randolph Data Services, Inc. The two companies will provide additional revenues of approximately $4.5 million and will employ about 300. John Randolph, president, says that the continuing shortage of trained computer personnel makes education a particularly interesting area.

Just as the continuing shortage of names makes data processing firms a particularly confusing area for the market-watchers.

Burroughs Goes To Hollywood-Fla.

Expansions

PROVIDENCE, R.I. – *Data Personnel Consultants* will open additional offices in Waltham, Mass. and Arlington, Va. The Waltham facility, serving the greater Boston area, will be managed by Dan L. Rees, a newly elected vice president of the company. The Arlington office, serving the greater Washington area, will be managed by John F. Klar, Jr.

WOODLAND HILLS, CALIF. – *Programming Services, Inc. (PSI)* has moved to larger headquarters in Woodland Hills. The new facilities, in the recently completed Warner Victory Centre building, are PSI's executive offices as well as headquarters for the Los Angeles division.

DETROIT – *Burroughs* has leased a new plant in Hollywood, Fla. to manufacture electronic products. Production will start in March in the 30,000 square foot facility and employment will reach between 200 and 300 persons in 1968.

$30,000 Scanner Blocks Data On Tape

NEWTOWN, PA. – Optical Scanning Corp. has announced the OpScan 50, priced at $30,000 and up. This new optical mark sensing system fills a wide range of data gathering tasks for retailers, transportation companies, insurance firms, manufacturers, banks, etc. Operating off-line, it scans the forms and stores the data on a magnetic tape, with up to 5 records per block. Densities of up to 800 cpi are available.

Savings Available

OpScan 50 offers savings in keypunching and keyverifying costs. It eliminates keypunch operators by having the capability to read either machine-printed or pencil-marked data. Speed is achieved by computer printing of forms – a feature which helps get rid of the many clerical errors experienced in keying steps.

One of the standard applications for such a device is the unit control ticket system. This is the small tear-off form many retail stores use for merchandise control and sales analysis. Other applications include the 22-column stub cards used with many credit payment forms and by banks for Christmas club payments, transportation tickets, debit forms for insurance companies, and toll tickets. An option on the OpScan 50 allows punched cards or tickets to be used.

The Opscan 50 reader

Data Mark Reader

OpScan 50 reads forms down to one inch by three inches – directly from computer-printed, machine-printed, hand-marked, punched, and bar-coded forms, storing the data on magnetic tape in an off-line conversion.

OpScan 50 works alone, but teams with a computer to speed record-keeping. Speed varies according to document size, with one inch by three inch forms at a speed of 24,000 per hour.

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$ $ FINANCIAL MATTERS $ $

ARMONK, N.Y. – *IBM* declared a regular quarterly dividend of $1.30 a share on the common stock, payable March 9 to shareholders of record February 8. The board of directors also voted to recommend to stockholders a 100% stock split. Upon approval by stockholders at the annual meeting on April 29, the one for one split would become effective as soon as possible after May 9.

MINNEAPOLIS – The sales, rentals and service income of *Control Data Corporation* and its subsidiaries amounted to $163,938,959 for the six months ended December 31 as compared with $110,464,119 for the same period last year, for an increase of 48%. Net earnings were $8,563,386 which, after preferred stock dividends, amounted to $1.01 per share of common stock. This compared with earnings of $1,769,410, or $.16 per share for the same period in 1966.

DETROIT – *Burroughs* reported net earnings from worldwide operations for 1967 of $34,830,000, a 16% increase over 1966 earnings. Net earnings per shares a year ago. This year's report reflects a 57% increase in revenue and a quarter earnings were $15,644,000 or $1.91 per share in spite of a five week work stoppage at the corporation's Detroit area plants. 1966 fourth quarter earnings were $13,924,000 or $1.72 per share. Fourth quarter revenue was $173,043,000 which included over $17,000,000 government contract billing, as compared with 1966 fourth quarter revenue of $146,060,000.

HAWTHORNE, CALIF. – *Electronic Memories Inc.* and *Electralab Electronics Corp.* terminated negotiations for a proposed merger.

ANAHEIM, CALIF. – *California Computer Products, Inc.* reported earnings of $460,786 on revenue of $7,033,479 for the first six months of fiscal 1968, ended December 31. During the similar period the previous year earnings were $356,989 on revenue of $4,479,489. Earnings per share, adjusted for two stock splits, amounted to $.21 per share on 2,197,240 average shares outstanding, compared with $.20 per share on 1,773,505 average outstanding share for 1967 were $4.26 on 8,047,241 average shares outstanding. Fourth 29% increase in earnings over last year.

NEW YORK – *Bunker-Ramo Corp.* and *Amphenol Corp.* have signed definitive agreements to combine the businesses of the two companies. The combined business will operate under the name Bunker-Ramo, with the various divisions of Amphenol and Bunker-Ramo operating under their respective names and present management. Subject to necessary tax ruling and shareholders' approval, each share of Amphenol will be exchanged for one share of common stock of the combined company plus ¾ of a share of a new cumulative convertible preferred stock. Each present share of Bunker-Ramo common stock would be exchanged for one share of common stock of the combined companies. It is expected that common and preferred shares will be listed on the New York Stock Exchange.

Computer Stocks: Trading Summary

Week ending February 6, 1968

NEW YORK STOCK EXCHANGE	1967 High	1967 Low	Week High	Week Low	Last	Week Net Change	Week %Change
Addressograph-Multigraph	80 1/2	46 7/8	70	61	61 1/4	- 8	-11.55
American Research	195	37 3/4	163	137	143 1/4	-17 7/8	-11.09
Ampex Corp.	40 3/4	22 3/4	34 1/2	31 5/8	32 1/8	- 2	- 5.86
Burroughs	198 5/8	80 7/8	192 3/8	175 3/8	175 7/8	-12 7/8	- 6.79
Collins Radio	114 7/8	53	83 3/8	77 1/8	77 1/4	- 5 3/4	- 6.93
Control Data	165 5/8	33 1/2	133	115 1/2	118 1/2	-14 7/8	-11.15
Electronic Associates	30 1/4	16 3/4	22 3/8	19 1/2	20 3/8	- 1	- 4.48
General Electric	115 7/8	82 1/2	91 3/8	87 1/4	90 7/8	....	. . .
Honeywell	117 7/8	63 1/2	96 1/2	91	93 1/8	+ 1/4	+ 0.27
IBM	648	362 1/2	620	591 1/2	596	-22 1/2	- 3.64
Litton	120 3/8	67 1/8	75 5/8	67 1/8	73 3/8	- 1 1/2	- 2.00
Nat Cash Register	136 5/8	67 1/8	113	103 1/2	104 1/2	- 6 1/2	- 5.86
RCA	65 1/2	42 5/8	50 1/4	46 3/4	74 1/8	- 2 5/8	- 5.28
Raytheon	117	49	91 7/8	80 5/8	82	- 8 3/4	- 9.64
Sanders	77 1/4	37 5/8	54 5/8	47 5/8	50	- 4 3/8	- 8.05
Scientific Data	152 3/4	70 3/8	135 3/4	119	120	-14 3/8	-10.70
SCM	82 1/4	43 1/2	55 7/8	47 1/8	48 5/8	- 7	-12.58
Sperry Rand	65 1/8	28 1/8	53	46	47 3/8	- 4 3/4	- 9.11
NYSE COMPUTER STOCK AVERAGE						- 7.47	- 6.92

AMERICAN STOCK EXCHANGE	1967 High	1967 Low	Week High	Week Low	Last	Week Net Change	Week %Change
Audio Devices, Inc.	33 1/8	20	30 1/2	27 5/8	28 1/2	- 3/4	- 3.56
Automatic Data Processing	68 1/2	41 1/2	57 1/2	51 1/8	52 1/2	- 4 3/4	- 8.30
Calcomp	21 7/8	7 1/2	17 3/8	15 3/8	15 5/8	- 1 1/2	- 8.76
Computer Applications	46 3/4	34	40 1/4	35 3/4	36 7/8	- 3 5/8	- 8.95
Computer Sciences	47 3/8	14	33 3/8	29 3/8	31 1/8	- 2 1/4	- 6.76
Digital Equipment Corp.	67 5/8	18	50 1/2	45 3/8	46 3/4	- 3	- 6.03
GC Computer Corp.	136	29 3/8	127	105 1/2	106 3/4	-20 1/4	-15.94
Leasco	41	23 1/4	30 1/8	27 1/8	28 7/8	- 1	- 3.35
Levin-Townsend Computer Corp.	146 1/4	36 5/8	123 1/2	102	103	-19	-15.57
Milgo Electronics	77	10 7/8	63	53 1/8	55 7/8	- 6 3/4	-10.78
Mohawk Data Sciences	23 1/8	5 1/8	22 1/2	19 7/8	20 1/2	- 1	- 4.75
Planning Research	198 1/2	133	156 1/2	133	141	-14	- 9.03
Potter Instrument	51	27 5/8	39 7/8	34	35 1/4	- 4 1/8	-10.48
Randolph Computer Corp.	40 1/2	12 3/8	32 3/4	28 1/2	30 1/8	- 2 1/8	- 6.59
AMEX COMPUTER STOCK AVERAGE	55 3/4	32 1/4	51 3/4	45	46 1/4	- 4 7/8	- 9.54
						- 5.93	- 8.56

OVER-THE-COUNTER	1967 High Bid	1967 Low Bid	Friday Bid	Friday Asked	Last Friday Bid	Week Net Change Bid	Week % Change Bid
Applied Data Research	30	3 1/8	25	27	28	- 3	-10.71
Bolt, Beranek & Newman, Inc.	30	8 1/4	21 3/4	22 3/4	21 3/4	. . .	. . .
Computer Usage	72	20 1/4	48	50	54	- 6	-11.11
Cyber-Tronics	19	4 3/4	16 3/8	16 7/8	16 1/2	- 1/8	- 0.76
Data Products	23 3/8	2 1/2	16 1/8	16 1/2	18	- 1 7/8	-10.41
Digitronics	27 1/2	6	21	22	22	- 1	- 4.55
DPA, Inc.	17 3/8	4 1/4	14 3/4	15 1/4	16 1/2	- 1 3/4	-10.61
Electronic Memories	57 1/2	12 3/8	51	51 3/4	54	- 3	- 5.56
Fabri-Tek	15 3/4	6	10 5/8	11 1/8	10 3/4	- 1/8	- 1.16
LMC Data, Inc.	16	7 3/8	12 3/4	13 1/4	13 1/2	- 3/4	- 5.56
Management Assistance	24 3/8	10 1/8	13 1/2	13 7/8	13 7/8	- 3/8	- 2.69
Memorex	66 1/2	64	66 1/2	68	68 3/8	- 1 7/8	- 2.74
Optical Scanning Corp.	102	25 3/4	97	99	97	. . . .	. . .
Recognition Equipment Corp.	198	48 1/2	184	188	179	+ 5	+ 2.79
Systems Engineering Labs	63 1/4	8 7/8	52 1/2	53 1/2	59 1/2	- 7	-11.76
University Computing Co.	93	71	75	77	86	-11	-12.79

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RCA Abandons Its Lightening Symbol - Tries New Look

NEW YORK – RCA has launched a complete and systematic change in style to reflect the company's growth and diversification. The new look will affect the company's products, services, advertising, and terminology describing the company's varied activities. Corporation president Robert W. Sarnoff initiated the communications program when he took office in January, 1966.

The first sign of change is RCA's new trademark – three letters standing in a bold contemporary design to replace the 46-year-old circular "lightning stroke" design. Coming soon will be changes in printed material, product identification, advertising in all media, signs, and uniforms.

The communications program was developed with the aid of Lippincott & Margulies, Inc.

You Can Get Your Room Reservation I[n] 15 Seconds - We Timed A Case Or Two

MEMPHIS, TENN. – The world's largest computer-controlled room reservation service is now in operation at more than 900 Holiday Inns across the country. Holiday Inns of America has converted its Holidex network to third generation IBM 360s.

15-Second Reservations Really Work

The company claims that any innkeeper can learn the room availability of any other inn in 15 seconds or less. COMPUTERWORLD tested out the claim at the Boston Holiday Inn and found it to be accurate – the operation took exactly 14 seconds. At some of the outlying inns the operators were taking a little longer – but in no case was it longer than 80 seconds.

The hub of the network is two IBM System/360 Model 40s installed in a new circular building in Memphis. More than 200,000 miles of communications lines focus on the Memphis installation, connecting every inn and every part of the country.

Communication with the central computer is provided by nearly 1,000 special IBM 1971 reservation terminals at all the inns and sales offices. In addition, 200 of IBM's 2970 terminals are installed in sales locations to provide flexibility in getting management information out of the system when it is needed.

New Uses for Computers

Company president Kemmons Wilson gave two reasons for the move to third generation computers. "First," he said, "we simply outgrew the capabilities of our earlier system." When the Holidex was first announced in 1965 there were 500 inns. Now there are more than 900, with a new one added every 67 hours.

"Second," Wilson said, "we are constantly finding new ways to use the computers. This places added demands on available processing time and power."

General Data Corp., a Holiday Inns subsidiary, was formed in 1965

A view of the Holidex Reservation System control room, showing the locations of various Holiday Inns throughout the country. These now provide an automatic reservation system with a turn-around time of 15 seconds.

to operate the Holidex system and to find new ways of using the computers. One of the computers at Memphis controls the Holidex system, while the other handles the company's other data processing tasks and provides back-up power for the Holidex network.

Ordering Soap by Computer

One job handled by the computer is site forecasting. The computer processes all available data on a proposed Holiday Inn location and projects the site's success probability.

Orders for supplies such as soap and towels are entered directly into the system from inn terminals. Eventually this entry will automatically produce an order to ship merchandise, update inventories, and create the invoice.

Uses Dictionary

Document Retrieval Aided By New 360 Operating System Software

WHITE PLAINS, N.Y. – A computer-based document processing system, now available, allows IBM System/360 full Operating System users to store full text abstracts, or identifying keywords in machine-readable form. It can be used to process documents in such fields as law, medicine, engineering, and the physical sciences.

The System/360 Document Processing System can be used for the storage and retrieval of document references or index terms.

English Input

The program notes all descriptive words in the text of incoming documents – except common words such as conjunctions and articles – and compares them to words in a computer-stored dictionary. The document numbers in which these descriptive words occur are then added to an index stored in the computer.

To search for a document, a request is prepared using English language statements. For example, the user may be interested in terms relating to steel production. In his query he would list the words "production," "steel," and "steel mill." His request would also contain appropriate modifiers designed to narrow the search. A set of punched cards is prepared as input to the computer.

Bibliography Printout

The system's output is a bibliography of documents which satisfy the search criteria. Full-text printout is also available.

To assure a high level of success in retrieving relevant documents, the system includes a synonym/equivalent file, designed to expand the number of search terms.

Operating under the control of OS/360, the system requires a ... mum configuration of a Sys... Model 40 with 128 bytes ... main storage.

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2 ☐ Manufacturer of Computers or Data Systems
3 ☐ Manufacturer (except computers or data systems)
4 ☐ Utility
5 ☐ Wholesale/Retail
6 ☐ Finance
7 ☐ Consultants or DP Services
8 ☐ Business Service (except DP)
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10 ☐ Government/Military
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C ☐ Corporate Officers: Owners, Partners, General Managers, etc.
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